

Dr Susan Denham
(formerly S.L. McCabe)
Principal Lecturer

Affiliation:

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Education

1995, Ph.D. in Computing, University of Plymouth, *Neural Models of Subcortical Auditory Processing*
1995, SEDA Teaching in Higher Education
1992, B.Sc. Honours in Computer Science (with distinction), University of South Africa
1980, B.Sc. in Physics (with distinction), University of South Africa

Academic Employment History

2002-present	Principal Lecturer, School of Computing, University of Plymouth
1994-2002	Senior Lecturer in Artificial Intelligence, School of Computing, University of Plymouth
1991-1994	Higher Scientific Officer, Control Engineering, Royal Naval Engineering College (RNEC), Plymouth
1989-1991	Lecturer in Computing, College of Further Education, Plymouth
1981-1991	Research Assistant (part time), Control Engineering, RNEC, Plymouth
1979-1981	Research Assistant, Mechanical Engineering Department, RNEC, Plymouth

Selected Publications

Griffiths ML, Svozil D, Worsfold PJ, Denham SL, Evans EH (2002). "Variable reduction algorithm for atomic emission spectra: application to multivariate calibration and quantitative analysis of industrial samples", *J. Anal. At. Spectrom.*, 17, 800-812.

Denham SL (2001). "Cortical synaptic depression and auditory perception". In *Computational Models of Auditory Function*, Greenberg S, Slaney M (ed.s), NATO ASI Series, IOS Press, Amsterdam, 281-296.

Denham SL, Denham MJ (2001). "An investigation into the role of cortical synaptic depression in auditory processing". In *Emergent Neural Computational Architectures based on Neuroscience*, Wermter S, Austin J, Willshaw D (ed.s), Lecture Notes in Artificial Intelligence, Springer, 494-506.

Griffiths ML, Svozil D, Worsfold PJ, Denham SL, Evans EH (2000). "Comparison of traditional and multivariate calibration techniques applied to complex matrices using inductively coupled plasma atomic emission spectroscopy", *J. Anal. At. Spectrom.*, 15, 967-972.

Denham SL (1999). "Synaptic depression may explain many of the temporal response properties observed in primary auditory cortex: a computational investigation". Proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN'99), IEEE Press: New York.

Borisyuk R, Denham MJ, Denham SL, Hoppensteadt F (1999). "Computational models of predictive and memory-related functions of the hippocampus", *Reviews in the Neurosciences*, 10, 213-232.

McCabe SL (1998). "Cortical synaptic depression may explain many of the temporal response properties observed in primary auditory cortex: a computational investigation", *Journal of the British Society of Audiology*.

McCabe SL, Denham MJ (1998). "A Thalamocortical Model of Auditory Streaming". In: Proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN'98), 1541-1546, IEEE Press: New York.

McCabe SL, Denham MJ (1998). "A Model of the Perception of Concurrent Vowels at Short Durations". In: Proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN'98), 1575-1579, IEEE Press: New York.

Denham MJ, McCabe SL (1998). "A Model of Predictive Learning in the Rat Hippocampal Principal Cells during Spatial Activity". In: Proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN'98), IEEE Press: New York.

McCabe SL, Denham MJ (1997). "A model of auditory streaming", *J. Acoust. Soc. Am.*, 101(3), 1611-1621.

Bapi RS, McCabe SL, Roy R (1996). Book Review of "Artificial Intelligence and Neural Networks: Steps toward Principled Integration", V. Honavar and L. Uhr (Eds.), Academic Press, 1994: *Neural Networks*, 9(3), 545-548.

McCabe SL, Denham MJ (1996). "A neurocomputational model of auditory streaming", Proc. European Speech Communication Association Auditory Basis of Speech Perception Workshop, Keele, UK, July 1996, pp 208-211

Denham MJ, McCabe SL (1996). "Biological basis for a neural model of learning and recall of goal-directed sensory-motor behaviours", Proc World Congress on Neural Networks (WCNN'96), San Diego, USA, September 1996.

McCabe SL, Denham MJ (1996). "A model of auditory streaming ", in DS Touretzky, MC Mozer, ME Hasselmo, (ed.s), "Advances in Neural Information Processing Systems 8", MIT Press, 52-58.

Invited Talks

MRC Centre for the Neural Basis of Hearing, University of Cambridge, May 2002.

MRC Institute of Hearing Research, Nottingham University, December 1998.

Sheffield University, Department of Computing, November 1998.

Neural Computing Applications Forum, DERA, Malvern, January 1998.

Workshop on Auditory Scene Analysis, Neural Information Processing Systems Conference (NIPS'96), Aspen, December, 1996.

Boston University, Department of Neural and Cognitive Systems, December 1995.

Other Research Related Activities

Chair of the session on Auditory Scene Analysis at NATO Advanced Study Institute on Computational Hearing, Italy, July, 1998.

Referee for the following journals : *Journal of the Acoustical Society of America*, *Perception and Psychophysics*, *Speech Communication*, *Neural Networks*, *Network: Computation in Neural Systems*.

Research Grants

Braun J, Denham SL, Del Guidice P, Deco G, Invernizzi G, Fusi S (2002-2005). 'Attend-to-learn and learn-to-attend with neuromorphic, analogue VLSI, European Commission, Information Societies Technologies Programme, IST-FET Open (RTD), euro 2277158.

Denham SL (2000-2001). 'Modelling the recognition of complex sounds', Research Fellowship, The Leverhulme Trust, £16836.

Evans EH, Worsfold PJ, McCabe SL (1997-1999). 'Improved Elemental Assay using Atomic Spectroscopy'. £ 98919.

Akhter M, McCabe SL, Crocker G, Pearce J (1995-1998). 'Improvement of thin film coating tolerances and development of advanced design capabilities'. Teaching Company scheme with Omitec Thin Films. £90707 EPSRC, £67248 Omitec.

Research Supervision

Ph.D. completions: 2 students

Ph.D supervision: 2 (year 1), 1 (year 3), 1 (year 4).

Examination Experience

University of Plymouth: Internal examiner for 3 Ph.D. theses and 1 M.Phil. thesis.

University of Essex: External examiner for 1 Ph.D thesis 2003.

Commercial Interests

2000-present, NeuVoice. Directors: Denham MJ, Denham MA, Parkinson S, Denham SL, Edwards, M, Drysdale S. University start up company with PEP. Over £1800000 in venture capital raised. Created to exploit our work in auditory perception in the form of noise robust speech recognition and acoustic monitoring for embedded systems.

1998-2000, Neural Systems Ltd. Directors: Denham MJ, Denham MA, Parkinson S, Denham SL. University start up company with PEP. £300000 joint development project on with Invensys plc.

Teaching and Academic Experience

1997-2000, Programme manager for the MSc in Computational Intelligence.

1994-1997, Programme manager for the MSc in Intelligent Systems.

Masters Level Modules: Sensors and Sensor Systems Applications, Machine Learning, Knowledge Engineering, Programming for Artificial Intelligence.

Undergraduate Modules: Introduction to Artificial Intelligence, Expert Systems, Advanced Artificial Intelligence (Evolutionary Computation)